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#### AGONISTIC ENCOUNTERS BETWEEN BALD EAGLES AND OTHER RAPTORS WINTERING IN WESTCENTRAL UTAH

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Each year 200-300 Bald Eagles (*Haliaeetus leucocephalus*) winter in Rush Valley, 70 km southwest of Salt Lake City, Tooele Co., Utah (Edwards 1969). Golden Eagles (*Aquila chrysaetos*), Ferruginous Hawks (*Buteo regalis*), and Red-tailed Hawks (*Buteo jamaicensis*) also winter in the area and may compete with Bald Eagles for food. In January-March 1982, 1983 and 1984 we compiled over 1500 hr of field observations on Bald Eagles wintering in Rush Valley. We noted seven interspecific encounters involving adult Bald Eagles and one of the above raptors. As far as we know, these are the only reported observations of agonistic interactions between Bald Eagles and Golden Eagles or Ferruginous Hawks.

We observed two interspecific encounters between Bald and Golden Eagles near Black-tailed Jackrabbit (*Lepus californicus*) carcasses during 1984. On 17 January K.G. saw an adult Bald and an adult Golden Eagle involved in an aerial confrontation 50 m above the ground. Both birds made several passes at one another but no contact was made, and within two min both had landed on the ground. Three min later the Bald Eagle flew directly at, dove, and struck on the back another adult Golden Eagle perched on the ground 50-100 m away. A struggle ensued in which each bird struck the other repeatedly with open talons. Most attacks were initiated with short hops, but rushes along the ground were also seen. The encounter lasted for about one min and ended when the Golden Eagle flew away. The Bald Eagle returned to the carcass site and

dragged a freshly killed jackrabbit to an area free of vegetation but was supplanted by another adult Bald Eagle before feeding. Later, similar fights took place between several Bald Eagles that attempted to secure the carcass.

On 24 January an adult Golden Eagle was seen feeding on a jackrabbit while one adult Bald and one adult Golden Eagle stood nearby. After 10 min the Bald Eagle supplanted the feeding bird with a short rush to the carcass. Seven min later the second Golden Eagle displaced the Bald Eagle by momentarily landing on its back with closed talons. The Bald Eagle responded by flying and landing about five m from the carcass. A third adult Golden Eagle closer to the feeding site faced the Bald Eagle and lowered its head each time the latter attempted to approach the carcass. Eight min later the Bald Eagle successfully supplanted the feeding eagle by flying to the carcass; all Golden Eagles flew away within five min after the Bald Eagle began to feed.

Overall, interspecific confrontations between eagles at feeding sites were rare. Golden Eagles were seen at only 25% (N = 87) of the carcasses visited by Bald Eagles and were present <22% of the time (N = 239 hr) at feeding sites of marked birds. Based on the incidents of 17 and 24 January, we believe that Bald Eagles may occasionally steal prey from Golden Eagles, which contrasts with the dominant position Golden Eagles appear to have in some Bald Eagle winter roosts (Lish 1973).

Aggressiveness shown by both species of eagles may have

been a response to a declining food supply. Jackrabbits are the principal food of eagles in Rush Valley (Edwards 1969; Platt 1976) and our surveys indicated decreasing jackrabbit population levels in 1982–1984. Each January subjective assessments of jackrabbit numbers were made in particular sections of the study area during hunts to secure bait for trapping Bald Eagles. A conservative estimate of two to three times more rabbits were seen in 1982 than in 1983; rabbits were so scarce during 1984 that those used for trapping were acquired outside Rush Valley. Annual counts in Rush Valley by the U.S. Army indicated peak jackrabbit numbers during fall 1980 were followed by continual declines through 1985 (R. LeClerc, pers. comm.). Reduction in rabbit numbers was further quantified by data collected during 28 prey transects in 1983 and 1984. Each 0.8 km transect was walked three times in 1983 and twice in 1984 at randomly selected dates and times during March. Significantly more rabbits were seen in 1983 than in 1984 (0.88 rabbits/km and 0.07 rabbits/km, respectively, Mann-Whitney  $U$ -Test,  $U_{(14,14)} = 24$ ,  $P < 0.01$ ). Swingland (1975) noted that limited food availability led to more confrontations in captive Rooks (*Corvus frugilegus*).

A second indicator of prey availability was the condition of captured eagles subjectively assessed by palpating fat reserves below the sternum. Eagles captured in both 1983 and 1984 had significantly less fat deposits than those captured in 1982 (Mann-Whitney  $U$ -Test,  $U_{(6,7)} = 34$ ,  $P < 0.005$ , and  $U_{(6,13)} = 77$ ,  $P < 0.001$ , respectively). Lastly, less competition for food in 1982 was suggested by the presence of fewer Golden Eagles at carcasses with Bald Eagles (7%,  $N = 14$ ) than in succeeding years (16%,  $N = 79$ ).

Encounters between Bald Eagles and raptors other than Golden Eagles were rare and only five incidents were observed during 1628 hr of observation. Though hawks were never seen near feeding eagles, three instances involving Ferruginous Hawks were probably motivated by food.

On 29 March 1983 an adult Bald Eagle attempted to kleptoparasitize adult Ferruginous Hawks on two occasions. The first began when the eagle flew directly at a hawk carrying an unidentified ground squirrel about 20 m above the ground. Upon intercepting the hawk, the eagle made four quick passes from 5–10 m above but made no contact. The hawk dropped the ground squirrel after the fourth pass and the eagle immediately flew to where the carcass fell but could not be seen on the ground. About one min later the eagle flew back to its original perch without the squirrel. Within an hour the same eagle pursued another Ferruginous Hawk carrying another ground squirrel. This apparent attempt at kleptoparasitism, however, was unsuccessful; the hawk remained above the eagle as both gained altitude and after several attacks from below, the eagle abandoned its pursuit.

Bald Eagles commonly steal food from Ospreys (*Pandion*

*haliaetus*) (Howell 1932; Bent 1937; Brown and Amadon 1968) and Common Mergansers (*Mergus merganser*) (Grubb 1971). Occasionally Bald Eagles kleptoparasitize vultures (*Cathartes* sp.) (Meinertzhagen 1959; Brown and Amadon 1968) and Northern Harriers (Baldwin 1940). Ferruginous Hawks are probably seldom attacked by Bald Eagles, however, because each usually winters in different habitats (Bent 1937).

We observed hawks attacking adult Bald Eagles on three occasions. On 18 February 1983 a Ferruginous Hawk stooped three times in broad, shallow arcs from a height of roughly 30 m at a Bald Eagle standing on the desert floor. The eagle lowered its head during each pass but on the last pass also raised a wing, presumably to keep its balance, as the hawk passed within one m. The hawk then ceased the attack and landed on the ground about 300 m away. Three min later the hawk made another stoop at the eagle which again responded by ducking its head. Although the eagle was not feeding, the presence of five Common Ravens (*Corvus corax*) and a Northern Harrier nearby suggested that a carcass may have been present.

Two attacks on a radio-tagged adult Bald Eagle were initiated by hawks for no apparent reason. On 7 March 1983 an adult Ferruginous Hawk dove from about 50–80 m above a soaring Bald Eagle. The eagle eluded the attack by first swerving and then quickly landing. The hawk flew away after the incident and the eagle remained perched for another 50 min. The next day the same eagle was soaring at 100–150 m when it was attacked by an adult Red-tailed Hawk. The Red-tail initiated the attack from 50–80 m above the eagle and displayed its talons during a dive. As the hawk passed the eagle rolled over and presented its talons but no contact was seen. Both birds then continued to soar and slowly drifted apart.

LeDuc (1970) saw a Red-tailed Hawk near its nest strike a Bald Eagle in flight in Minnesota. Our encounters were probably not directly associated with nest defense because both occurred over open desert far from any probable breeding sites. The onset of breeding behavior, however, may have prompted the hawks to attack; tolerance of large raptors, recognized as threats by hawks, may diminish during hawk breeding periods and lead to the type of attacks we observed.

Klem et al. (1985) described a series of observations where raptors killed other raptors and proposed such encounters were initiated by self-defense, territorial defense or predation. Our observations suggest that defense of food and attempts at kleptoparasitism also lead to interspecific confrontations in raptors and that the frequency and severity of such encounters appear to be related to food availability.

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#### OCCURRENCE AND FIRST NEST RECORD OF FLAMMULATED OWLS IN MONTANA

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The Flammulated Owl (*Otus flammeolus*) is reported to occur in Montana during annual migration (AOU 1983). Wright (1976) reported the first specimen record of a Flammulated Owl for Montana (UMZM 15231) and listed two other site records for the state. Skaar et al. (1985) reported five verified and one questionable Flammulated Owl records for Montana which included all previous records. In 1985 and 1986 calling Flammulated Owls

Table 1. Reports of Flammulated Owls for Montana, 1962-1986.

DATE	LOCATION	COMMENTS
Summer 1962	Flathead Co., Head of Lake McDonald, Glacier National Park	First state record; road kill
January 1965 <sup>a</sup>	Lewis and Clark Co., west of Helena	Found helpless in snowstorm; later died
October 1971	Ravalli Co., at Darby game bird farm	First specimen record; found injured; later died
4 September 1975	Missoula Co., downtown Missoula	First nesting evidence; recently fledged bird; injured; later released
4 September 1979	Ravalli Co., Cow Creek, Woodside	Found injured; later died
27 September 1980	Missoula Co., Grant Creek, Missoula	Road kill
21 November 1981 <sup>b</sup>	Flathead Co., east of Bigfork	Observed perched in tree with vole in talons
20 December 1981 <sup>c</sup>	Flathead Co., West Glacier	Observed chasing passerines at bird feeder
11 August 1982	Missoula Co., west of Missoula	Fledgling found by logger; later released
20 August 1985	Granite Co., Rock Creek road, 8 miles from I-90	Found injured; later released
15 July 1986	Missoula Co., Blanchard Lookout, Blanchard Creek	First nest record; snag felled by logger

<sup>a</sup> Reported by Pat McKinney.

<sup>b</sup> Reported by Robin Magadino.

<sup>c</sup> Reported by B. Reilly McClelland (2nd hand).